1-1-1983

Test 1497: Kubota M5950DT and M5950 Diesel 12-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1497 — KUBOTA M5950DT DIESEL
ALSO KUBOTA M5950 DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—643 rpm)								
58.00	2400	3.637	0.439	15.95	183	66	75	28.740
(43.25)		*(13.768)*	*(0.267)*	*(3.141)*	*(83.7)*	*(19.2)*	*(24.0)*	*(97.051)*
Standard Power take-off Speed (540 rpm)—One Hour								
52.81	2017	3.092	0.410	17.08	181	66	75	28.730
(39.38)		*(11.704)*	*(0.249)*	*(3.365)*	*(82.7)*	*(19.1)*	*(23.9)*	*(97.017)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
50.33	2451	3.074	0.427	16.37	178	66	75	.....
(37.53)		*(11.636)*	*(0.260)*	*(3.225)*	*(80.8)*	*(18.9)*	*(23.9)*	.....
0.00	2539	1.162	.....	.....	166	66	75	.....
(0.00)		*(4.399)*	.....	.....	*(74.7)*	*(18.9)*	*(23.9)*	.....
25.65	2497	1.938	0.529	13.23	170	66	75	.....
(19.13)		*(7.336)*	*(0.322)*	*(2.608)*	*(76.7)*	*(18.9)*	*(23.9)*	.....
58.00	2400	3.648	0.440	15.90	183	66	75	.....
(43.25)		*(13.809)*	*(0.268)*	*(3.132)*	*(83.9)*	*(18.9)*	*(23.9)*	.....
12.95	2522	1.492	0.806	8.68	168	66	75	.....
(9.66)		*(5.648)*	*(0.490)*	*(1.710)*	*(75.3)*	*(18.9)*	*(23.9)*	.....
38.09	2472	2.456	0.451	15.51	176	66	75	.....
(28.40)		*(9.297)*	*(0.275)*	*(3.055)*	*(79.7)*	*(18.9)*	*(23.9)*	.....
Av 30.84	**2480**	**2.295**	**0.521**	**13.44**	**173**	**66**	**75**	**28.750**
Av (23.00)		***(8.688)***	***(0.317)***	***(2.647)***	***(78.5)***	***(18.9)***	***(23.9)***	***(97.084)***

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (C-2) Gear											
48.15	3548	5.09	2400	7.23	3.530	0.513	13.64	182	59	71	28.990
(35.91)	*(15.78)*	*(8.19)*			*(13.361)*	*(0.312)*	*(2.687)*	*(83.3)*	*(14.7)*	*(21.4)*	*(97.895)*
75% of Pull at Maximum Power—Ten Hours 8th (C-2) Gear											
38.66	2721	5.33	2452	4.93	2.857	0.517	13.53	180	59	63	28.885
(28.83)	*(12.10)*	*(8.57)*			*(10.813)*	*(0.315)*	*(2.666)*	*(82.1)*	*(14.8)*	*(17.4)*	*(97.540)*
50% of Pull at Maximum Power—Two Hours 8th (C-2) Gear											
26.36	1814	5.45	2474	3.66	2.229	0.592	11.83	174	55	66	29.050
(19.66)	*(8.07)*	*(8.77)*			*(8.438)*	*(0.360)*	*(2.330)*	*(78.9)*	*(12.8)*	*(18.9)*	*(98.097)*
50% of Pull at Reduced Engine Speed—Two Hours 10th (D-1) Gear											
26.37	1815	5.45	1431	3.50	1.793	0.476	14.70	179	59	74	28.985
(19.66)	*(8.07)*	*(8.77)*			*(6.789)*	*(0.290)*	*(2.896)*	*(81.7)*	*(14.7)*	*(23.1)*	*(97.878)*
MAXIMUM POWER IN SELECTED GEARS											
36.99	5749	2.41	2453	14.82	5th (B-2) Gear			173	45	49	29.260
(27.59)	*(25.57)*	*(3.88)*						*(78.3)*	*(7.2)*	*(9.4)*	*(98.807)*
47.99	5432	3.31	2401	12.50	6th (B-3) Gear			180	46	49	29.270
(35.79)	*(24.16)*	*(5.33)*						*(82.2)*	*(7.8)*	*(9.4)*	*(98.840)*
48.54	4726	3.85	2398	10.38	7th (C-1) Gear			181	55	63	28.970
(36.20)	*(21.02)*	*(6.20)*						*(82.8)*	*(12.8)*	*(17.2)*	*(97.827)*
49.29	3628	5.09	2400	7.11	8th (C-2) Gear			181	53	60	28.960
(36.76)	*(16.14)*	*(8.20)*						*(82.8)*	*(11.7)*	*(15.6)*	*(97.794)*
48.81	2569	7.12	2401	4.84	9th (C-3) Gear			181	57	66	28.970
(36.40)	*(11.43)*	*(11.47)*						*(82.8)*	*(13.9)*	*(18.9)*	*(97.827)*
47.80	1970	9.10	2397	3.72	10th (D-1) Gear			182	58	68	28.980
(35.64)	*(8.76)*	*(14.65)*						*(83.3)*	*(14.4)*	*(20.0)*	*(97.861)*

Department of Agricultural Engineering

Dates of Test: September 26 to October 11, 1983

Manufacturer: KUBOTA LTD, 2-47 Shikitsu higashi, 1-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 47.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8404 **Fuel weight** 6.998 lbs/gal *(0.839 kg/l)* **Oil SAE** 20-20W **API service classification** SE-SF, CC-CD **To motor** 1.990 gal *(7.535 l)* **Drained from motor** 1.792 gal *(6.785 l)* **Transmission and hydraulic lubricant** Shell Donax TD or equivalent **Front axle lubricant** SAE 80/90 gear oil **Total time engine was operated** 45.0 hours.

ENGINE: Make Kubota Diesel **Type** three cylinder vertical **Serial No.** D3200-A-19386 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.29″ × 4.53″ *(109 mm × 115 mm)* **Compression ratio** 17 to 1 **Displacement** 196 cu in *(3219 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow paper cartridge **Fuel filter** one paper element and water separator **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** M5950DTF-U50039 **Tread width** rear 55.9″ *(1420 mm)* to 79.5″ *(2020 mm)* front 55.9″ *(1420 mm)* to 63.8″ *(1620 mm)* **Wheel base** 83.3″ *(2115 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 36.3″ *(921 mm)* Vertical distance above roadway 36.8″ *(935 mm)* Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.0 *(1.6)* second 1.3 *(2.1)* third 1.8 *(2.9)* fourth 2.3 *(3.6)* fifth 2.9 *(4.6)* sixth 3.9 *(6.3)* seventh 4.5 *(7.2)* eighth 5.7 *(9.2)* ninth 7.8 *(12.5)* tenth 9.8 *(15.8)* eleventh 12.5 *(20.1)* twelfth 17.1 *(27.5)* reverse 0.8 *(1.2)*, 1.6 *(2.6)*, 3.3 *(5.2)*, 7.1 *(11.5)* **Clutch** single plate dry disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 130″ *(3.3 m)* left 130″ *(3.3 m)* (on concrete surface without brake) right 158″ *(4.0 m)* left 158″ *(4.0 m)* **Turning space diameter** (on concrete surface with brake applied) right 276″ *(7.0 m)* left 276″ *(7.0 m)* (on concrete surface without brake) right 331″ *(8.4 m)* left 331″ *(8.4 m)* **Power take-off** 540 rpm at 2017 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 8th (C-2) GEAR

Crankshaft Speed rpm	2400	2163	1914	1684	1436	1198
Pull—lbs *(kN)*	3628 *(16.14)*	3808 *(16.94)*	4090 *(18.19)*	4330 *(19.26)*	4512 *(20.07)*	4509 *(20.06)*
Increase in Pull %	0	5	13	19	24	24
Power—Hp *(kW)*	49.29 *(36.76)*	46.39 *(34.60)*	43.76 *(32.63)*	40.43 *(30.15)*	35.71 *(26.63)*	29.78 *(22.21)*
Speed—Mph *(km/h)*	5.09 *(8.20)*	4.57 *(7.35)*	4.01 *(6.46)*	3.50 *(5.63)*	2.97 *(4.78)*	2.48 *(3.99)*
Slip %	7.11	7.63	8.21	9.11	9.44	9.56

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	97.5	97.5
75% of Pull at Maximum Power—Ten Hours		97.0
50% of Pull at Maximum Power—Two Hours		96.5
50% of Pull at Reduced Engine Speed—Two Hours		91.0
Bystander in 12th (D-3) gear		87.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 8th (C-2) Gear											
47.51 *(35.43)*	3340 *(14.86)*	5.33 *(8.58)*	2400	4.68	3.494 *(13.226)*	0.515 *(0.313)*	13.60 *(2.679)*	183 *(83.6)*	59 *(14.7)*	74 *(23.3)*	28.975 *(97.844)*
MAXIMUM POWER IN SELECTED GEARS											
42.66 *(31.81)*	8350 *(37.14)*	1.92 *(3.08)*	2434	14.90	4th (B-1) Gear			175 *(79.4)*	45 *(7.2)*	48 *(8.9)*	29.240 *(98.739)*
49.13 *(36.63)*	3457 *(15.38)*	5.33 *(8.58)*	2400	4.65	8th (C-2) Gear			181 *(82.8)*	52 *(11.1)*	56 *(13.3)*	28.950 *(97.760)*

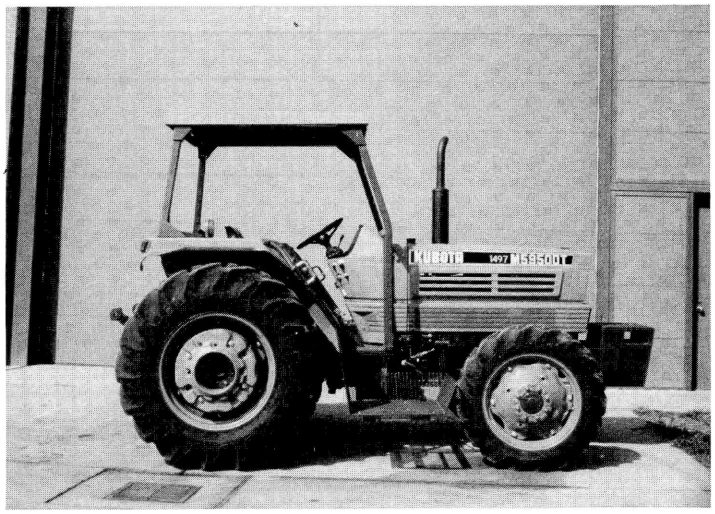
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-28; 6; 16 *(110)*	Two 16.9-28; 6; 16 *(110)*
Ballast	—Liquid (each)	432 lb *(196 kg)*	None
	—Cast Iron (each)	360 lb *(163 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5-24; 6; 30 *(205)*	Two 9.5-24; 6; 30 *(205)*
Ballast	—Liquid (each)	173 lb *(79 kg)*	None
	—Cast Iron (each)	585 lb *(265 kg)*	None
Height of Drawbar		15.5 in *(395 mm)*	15.5 in *(395 mm)*
Static Weight with Operator	—Rear	5110 lb *(2318 kg)*	3525 lb *(1599 kg)*
	—Front	4110 lb *(1864 kg)*	2595 lb *(1177 kg)*
	—Total	9220 lb *(4182 kg)*	6120 lb *(2776 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 145°F *(62.8°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During inspection it was found that the exhaust valves of cylinders 1 and 2 were pitted.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1497.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Kubota M5950DT Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irwin T. Omtvedt, Dean and Director